

What is claimed is:

1. A method for monitoring an air-mass measuring device in an air supply system of an internal combustion engine having an electrically-driven compressor, the method comprising the steps of:

5 modeling an air mass flow in said air supply system in dependence upon an rpm of said compressor and a pressure ratio of said compressor to obtain a modeled air mass flow; and,

comparing said modeled air mass flow to a measured air mass flow measured by said air-mass measuring device.

2. The method of claim 1, comprising the further step of determining said rpm of said compressor and said pressure ratio of said compressor after switchoff of said engine.

3. The method of claim 2, comprising the further step of measuring said pressure ratio when a bypass to at least one cylinder of said engine is open.

4. The method of claim 3, wherein said bypass is an exhaust-gas recirculation valve.

5. The method of claim 1, comprising the further step of measuring said pressure ratio of said compressor when a throttle flap is open.

6. The method of claim 1, comprising the further step of measuring said pressure ratio of said compressor when an inlet valve and an outlet valve of at least one cylinder are

simultaneously open.

7. The method of claim 6, comprising the further step of simultaneously opening said inlet valve and said outlet valve in dependence upon a piston position in at least one cylinder for measuring said pressure ratio of said compressor.

8. The method of claim 1, comprising the further step of utilizing a valve overlapment of an inlet valve and an outlet valve of at least one cylinder in dependence upon a run-out position of the piston for the measurement of said pressure ratio of said compressor.

5 9. The method of claim 1, comprising the further steps of:  
providing a pressure sensor for determining a pressure in said air supply system downstream of said electrically-driven compressor; and,

5 in advance of activating said electrically-driven compressor, matching said pressure sensor to an ambient pressure sensor.

10. The method of claim 1, comprising the further step of detecting a fault when a difference between said modeled air mass flow and said measured air mass flow exceeds a pre-given value in magnitude.

11. The method of claim 1, comprising the further step of matching said air-mass measuring device to said modeled air mass flow in dependence upon the comparison between said modeled air mass flow and said measured air mass flow.

12. The method of claim 11, wherein matching takes place when said comparison is outside a pre-given tolerance range.

13. An arrangement for monitoring an air-mass measuring device in an air supply system of an internal combustion engine having an electrically-driven compressor, the arrangement comprising:

means for modeling an air mass flow in said air supply system in dependence upon an rpm of said compressor and a pressure ratio of said compressor to obtain a modeled air mass flow; and,

means for comparing said modeled air mass flow to a measured air mass flow measured by said air-mass measuring device.